5-1-1972

Personality Traits of Nonswimmers and Swimmers

Bohden Jan Gulczewski

PERSONALITY TRAITS OF NONSWIMMERS AND SWIMMERS

by

Bohdan Jan Gulczewski

Bachelor of Science, University of North Dakota 1970

A Thesis

Submitted to the Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Science

Grand Forks, North Dakota

May
1972

This thesis submitted by Bohdan Jan Gulczewski in partial fulfillment of the requirements for the Degree of Master of Science from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

W. C. Koenig
(Chairman)

Calvin W. Rice

John L. Quaday

William Johnson
Dean of the Graduate School

Permission

Title PERSONALITY TRAITS OF NONSWIMMERS AND SWIMMERS

Department Physical Education

Degree Master of Science

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Date April 15th 1972

ACKNOWLEDGMENTS

The writer wishes to express his sincere appreciation to Dr. Walter Koenig, Dr. John Quaday and Dr. Calvin Vraa for aiding in the completion of this study.

Gratitude is also expressed to Dr. John Williams for his advice and direction with the statistics involved in this thesis.

Thanks is also expressed to the University of North Dakota students who willingly cooperated to make this research study possible.

Finally, thanks to my mother and father, whose constant guidance and help made my education possible.

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ABSTRACT

The investigation was made to determine whether there were personality differences between male and female nonswimmers and male and female swimmers using the Edwards Personal Preference Schedule as the test instrument. The 15 variables, of the test instrument, were administered to 144 University of North Dakota students enrolled in the swimming service program in the second semester 1971-1972. Only students categorized as beginner, intermediate and advanced were used in this study. Subjects were compared on the basis of swimming proficiencies, personality tests, and biographical data forms using the Unadjusted Main Effects Method to statistically analyze the data obtained. Comparisons revealed significant differences at the .05 level of confidence between nonswimmers and swimmers. The biographical data indicated a need to investigate methods of teaching swimming based on indications of pertinent personality traits, fears, and experiences in the water.

CHAPTER I

INTRODUCTION

Swimming is a physically wholesome, socially rewarding activity which has grown in popularity and participation in recent years due to the various innovative aquatic programs. Because of the ever present hazards of the water, knowing how to swim for self-preservation has become increasingly important to North American youth. However, many individuals do not know how to swim for various reasons, one of which is personality construction.

The majority of aquatic instructors recognize the fact that individuals do not know how to swim for a variety of reasons; for example, lack of exposure to swimming facilities, insufficient or ineffective instruction, traumatic water experiences, or unfavorable attitudes of parents towards swimming. However, not enough instructors realize that the execution of physical skills may be hampered or influenced by many characteristics, such as personality. Each student of swimming has a unique set of characteristics that contribute to his personality structure. The instructor who can recognize these traits and govern his teaching methods accordingly, often will obtain a higher success ratio in his students' swimming abilities. Until recently, many assumptions about swimmers and nonswimmers went unchallenged because they were believed unimportant. Now, however,

researchers are interested in every facet of an individual's personal structure to determine what attributes are common to people involved in a particular activity. Attributes such as motivation and intelligence are believed to be just as important as physical skill, fitness, endurance, coordination, and strength.

Aquatic instructors of the past have been interested only in the physical and mechanical methods of teaching students the joys of swimming. At present a trend has developed in all activities to study personality differences. Once these differences have been investigated and accepted they should be incorporated into teaching methods. Physical educators in all dimensions of teaching have become aware of personality differences and are willing to adopt the findings of researchers, but more substantial information is necessary to fully comprehend the magnitude and scope of the influence personality has on performance.

Purpose of the Study

The purpose of this study was to determine whether there were measurable personality trait differences between swimmers and nonswimmers on any of the fifteen scales presented on the Edwards Personal Preference Schedule. The Unadjusted Main Effects Method was the statistical technique employed to analyze the data obtained by this study.

Hypothesis

It was the researcher's belief that many nonswimmers have personality traits which make learning to swim an exceedingly distasteful process. The research hypothesis for this study stated a significant difference would exist between the scores of nonswimmers and swimmers on the variables of the Edwards Personal Preference Schedule at the .05 level of confidence.

Need for the Study

The aquatic instructor often gains the impression that nonswimmers seem to be different from swimmers. The nonswimmers seem to be shy, reserved and lack confidence in themselves, whereas the swimmers seem to be amicable, outgoing and confident in their water abilities. If this were true, and it were possible to support a hypothesis that there are significant personality trait differences between nonswimmers and swimmers, it may then be possible to develop a special approach to the instruction of nonswimmers that would take into consideration their special qualities, needs and desires. Despite the general homogeneity of a class of nonswimmers in terms of skills, the swimming instructor must deal with a group possessing a heterogeneous background in terms of past experiences in the water.

Delimitation

The study was delimited to a random sample of students enrolled in the swimming service program in the second semester 1971-1972, at the University of North Dakota. The study was also delimited to subjects in the proficiency categories of beginner, intermediate and advanced. The study was further delimited by the fact the Edwards Personal Preference Schedule was the only instrument used to determine the personality traits of the group.

Limitations

Certain limitations were imposed by the nature of the study undertaken:

1. The study did not take into account the possibility that some students registered in beginning swimming may have been more properly classified as intermediates.
2. The study did not set a standard that would separate the nonswimmers from the swimmers.
3. The study did not discriminate between the ability levels of nonswimmers and swimmers.
4. The data were interpreted by only one person.
5. There was no possibility of measuring the motivational factor involved in subjects responding to the test.
6. There was no way of knowing if subjects read and answered the questions that were most characteristic of themselves.
7. The investigator was not a trained specialist in administering the Edwards Personal Preference Schedule.

Definition of Terms

Nonswimmer.--A subject enrolled in the service program at the beginner level of proficiency as determined by the University of North Dakota.

Swimmer.--A subject enrolled in the service program at the intermediate or advanced level of proficiency as determined by the University of North Dakota.

Personality Variables.--The variables as stated in the Edwards Personal Preference Schedule Test Manual (1):

1. ach Achievement: To do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognized authority, to accomplish something of great significance, to do a difficult job well, to solve difficult problems and puzzles, to be able to do things better than others, to write a great novel or play.

2. def Deference: To get suggestions from others, to find out what others think, to follow instructions and do what is expected, to praise others, to tell others that they have done a good job, to accept the leadership of others, to read about great men, to conform to custom and avoid the unconventional, to let others make decisions.

3. ord Order: To have written work need and organized, to make plans before starting on a difficult task, to have things organized, to keep things neat and orderly, to make advance plans when taking a trip, to organize details of work, to keep letters and files according to some system, to have meals organized and a definite time for eating, to have things arranged so that they run smoothly without change.

4. exh Exhibition: To say witty and clever things, to tell amusing jokes and stories, to talk about personal adventures and experiences, to have others notice and comment upon one's appearance, to say things just to see what effect it will have on others, to talk about personal achievements, to be the center of attention, to use words that others do not know the meaning of, to ask questions others cannot answer.

5. aut Autonomy: To be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, to feel free to do what one wants, to do things that are unconventional, to avoid situations where one is expected to conform, to do things without regard to what others may think, to criticize those in positions of authority, to avoid responsibilities and obligations.

6. aff Affiliation: To be loyal to friends, to participate in friendly groups, to do things for friends, to form new friendships, to make as many friends as possible, to share things with friends, to do things with friends rather than alone, to form strong attachments, to write letters to friends.

7. int Intraception: To analyze one's motives and feelings, to observe others, to understand how others feel about problems, to put one's self in another's place, to judge people by why they do things rather than by what they do, to analyze the behavior of others, to analyze the motives of others, to predict how others will act.

8. suc Succorance: To have others provide help when in trouble, to seek encourage from others, to have others be kindly, to have others be sympathetic and understanding about personal problems, to receive a great deal of affection from others, to have others do favors cheerfully, to be helped by others

when depressed, to have others feel sorry when one is sick, to have a fuss made over one when hurt.

9. dom Dominance: To argue for one's point of view, to be a leader in groups to which one belongs, to be regarded by others as a leader, to be elected or appointed chairman of committes, to make group decisions, to settle arguments and disputes between others, to persuade and influence others to do what one wants, to supervise and direct the actions of others, to tell others how to do their jobs.

10. aba Abasement: To feel guilty when one does something wrong, to accept blame when things do not go right, to feel that personal pain and misery suffered does more good than harm, to feel the need for punishment for wrong doing, to feel better when giving in and avoiding a fight than when having one's own way, to feel the need for confession of errors, to feel depressed by inability to handle situations, to feel timid in the presence of superiors, to feel inferior to others in most respects.

11. nur Nurturance: To help friends when they are in trouble, to assist others less fortunate, to treat others with kindness and sympathy, to forgive others, to do small favors for others, to be generous with others, to sympathize with others who are hurt or sick, to show a great deal of affection toward others, to have others confide in one about personal problems.

12. chg Change: To do new and different things, to travel, to meet new people, to experience novelty and change in daily routine, to experiment and try new things, to eat in new and different places, to try new and different jobs, to move about the country and live in different places, to participate in new fads and fashions.

13. end Endurance: To keep at a job until it is finished, to complete any job undertaken, to work hard at a task, to keep at a puzzle or problem until it is solved, to work at a single job before taking on others, to stay up late working in order to get a job done, to put in long hours of work without distraction, to stick at a problem even though it may seem as if no progress is being made, to avoid being interrupted while at work.

14. het Heterosexuality: To go out with members of the opposite sex, to engage in social activities with the opposite sex, to be in love with someone of the opposite sex, to kiss those of the opposite sex, to be regarded as physically attractive by those of the opposite sex, to participate in discussions about sex, to read books and plays involving sex, to become sexually excited.

15. agg Aggression: To attack contrary points of view, to tell others what one things about them, to criticize others publicly, to make fun of others, to tell others off when disagreeing with them, to get revenge for insults, to become angry, to blame others when things go wrong, to read newspaper accounts of violence.

Review of Related Literature

The following review deals with various studies of personality and swimming pertinent to the study topic. Although no studies were done using the same instrument and subjects, the following were similar in nature.

This investigator felt the development of a more precise method of measuring potential would be of great value in determining the effectiveness of various teaching techniques. Morgan's (2) reaction to skills tests were similar to those of this researcher. Skill tests appear to be too insensitive for the precise measurement that would be necessary in determining levels of performance as well as improvement. A student's potential may be revealed in a personality test. Certain characteristics of an individual may enlighten the teacher as to how to deal with a particular person in order to obtain maximal results. Instructors, coaches, athletic directors and athletes are all theoretically attempting to abstract the highest level of proficiency from their students, athletes or subjects. But, not until recently has a subject's entire personal structure been investigated by researchers. Up to this time, only the physical capabilities were considered. Now, however, society has progressed to the point where personalities warrant as much attention as do the other factors of an individual's total being. Many researchers have been attempting to

pursue this course of study by doing countless investigations and comparisons of participators and nonparticipators in physical activities. A popular method of obtaining information pertinent to a person's character is through the fields of psychology and counseling and guidance using standardized tests developed for the express purpose of determining particular characteristics as defined by the test manuals. Some of these studies are presented and reviewed below.

Behram (3) did a study which attempted to determine whether there were personality differences between male college swimmers and nonswimmers, and whether there were relationships between personality traits and swimming progress. The Guilford Zimmerman Temperament Survey was the personality test instrument employed in this study. The significant results noted were (1) nonswimmers were much more shy, reserved and less bold than the swimmers; (2) nonswimmers were less sociable and tended to be introverts as compared to the swimmers who were extremely sociable and extrovert in nature. Whiting and Stembridge (4) supported the findings of Behram. They found boys, who were persistent nonswimmers showed significant differences in mean scores in introversion and neuroses when compared with swimmers of the same population.

Brunner (5) discovered significant personality differences between groups who participated in activities and those who did not participate in activities. Participants scored higher on six of the Adjective Checklist scales which reflected them as being extroverts whereas nonparticipants scored higher on scales designated as being characteristic of the introvert group.

Newmans' (6) null hypothesis that personality traits as measured by the Thurstone Temperament Schedule could not distinguish between competitive swimmers was rejected in the case of the traits of dominant, sociable and reflective. There were tendencies for swimmers ranked higher in the 100 yard freestyle to rank even higher in dominance, to think of themselves as leaders, capable of taking initiative and responsibility. Those ranked higher in the 100 yard breaststroke tended to rank lower in dominance, impulsiveness and in the sociable traits. High scores in the impulsive traits indicated a carefree disposition, decisions made quickly, competition enjoyed, and changes made easily from one task to another. High scores in the sociable traits indicated those who enjoy the company of others, make friends easily, and were sympathetic, cooperative, and agreeable. On the reflective scale those swimming the 200 yard freestyle were less meditative and preferred practical rather than theoretical problems. People who usually score high in reflective scales usually are quiet, work alone, enjoy work requiring accuracy and fine detail, and often take on more than they can finish.

Another study using the California Psychological Inventory as the test instrument was undertaken by Shendel (7) who attempted to determine if any differences existed in regard to psychological characteristics of male athletes and non athletes at the ninth and twelfth grade or college level. He concluded that the most consistent differences occurred between the ninth and twelfth grades. He found at the .05 level of confidence that ninth grade athletes scored significantly higher on the scales of dominance, sociability, capacity for status,

self acceptance, well-being, socialization, communality, and intellectual efficiency than did the non athletes. The twelfth grade athletes scored significantly higher at the .05 level of confidence on the scales of sociability, self acceptance, communality and achievement through conformance than did the non participants. Schendel further discovered college athletes scored significantly higher, at the .05 level of confidence, than did non participants on the scales of capacity for status, responsibility, tolerance, achievement through independence, intellectual efficiency, psychological mindedness, flexibility and femininity.

A study using the Edwards Personal Preference Schedule was completed by Havel (8). He compared scores of college basketball players and non athletes and found on the deference and abasement scales the basketball players scored significantly higher than the non athletes.

Williams, Hoepner, Moody and Ogilvie (9), studied personality traits of female fencers. They also administered the Edwards Personal Preference Schedule along with the Cattell Sixteen Personality Factor Questionnaire to 30 national level fencers in an attempt to determine whether any correlation existed between personality traits and level of achievement in the 1968 National Championship. They concluded that a fencer's personality could be defined; they were very reserved, self-sufficient, autonomous, and had a below-average desire for affiliation and nurturance. They also concluded that fencers had a strong need to be the very best, intelligent, creative, experimenting and imaginative. Using analysis of variance they discovered that only one personality factor differentiated between levels of achievement. The top level competitors were significantly more dominant than low level competitors.

In addition, Neal (10) found significant results when she used the Edwards Personal Preference Schedule to measure personality traits of United States Women Athletes who participated in the 1959 Pan American Games. She found the experimental group scored higher than the Edwards normative group on the variables of achievement, affiliation, aggression, order, autonomy and nurturance.

Another study done using the Edwards Personal Preference Schedule was done by Grimm (11). He compared the personality characteristics of women athletes at the University of Montana to the personality characteristics of a normative group of college women. He found that the women athletes used in his study were significantly lower on the variable of order which was in contrast to Neal's (10) findings. Grimm also found that on the variable of intraception, his group was significantly higher when compared to the national norm group.

Ogilvie, Tutko and Young (12) did a study employing Olympic champions. They used the United States swimming team and administered the Edwards Personal Preference Schedule, Cattell's Sixteen Personality Factor Questionnaire, the Jackson Personal Research, and the Osgood Semantic Differential. His samples were not all college students but they were compared as a group with the samples of college athletes from other sports. They were also compared with non athlete college norms in order to determine the psychological differences between Olympic swimmers and average college students. The Olympic swimmers exhibited a need to be on top, need for freedom and self-direction, need for attention, and scored significantly higher on aggression than college males. There was no evidence that they differed from other college

males with respect to emotional maturity, and appeared to be equally as adjusted as college men in general.

Ogilvie (13) summarized what his research revealed about personality of athletes and proficient competitors. One of the statements was that competition and confidence increased emotional stability. He also stated that there were dramatic shifts from extreme apprehension and a tendency to worry, to self assurance and self confidence.

According to Ogilvie (14), participants generally displayed greater qualities of dominance, achievement, endurance and aggression. Participants also possessed low anxiety and an unusual capacity to handle emotions under stress conditions. They also possessed a low neurotic level.

Chipman (15) compared participants and non participants in intercollegiate athletics with respect to personality differences using the Gordon Personal Profile and the Gordon Personal Inventory to measure personality.

Carter and Shannon (16) investigated high school athletes and non athletes to determine if personality trait differences existed. They compared their subjects on two instruments: (1) a homemade scorecard measuring cooperation, self control, leadership, reliability, agreeability and sociability; (2) and a standardized instrument, the Symonds Adjustment Questionnaire, Form A. The study revealed significant differences between the means on the adjustments scales. The non athlete scored higher on the academic items of adjustment and the athletes scored higher on the social items. Competitors scored significantly higher on the scales of leadership and sociability.

Slusher (17), in his study of high school athletes and non athletes, found swimmers to be less likely to be hypochondriacs and less likely to have neurotic tendencies.

The Ibrahim (18) study on recreation followed the California Psychological Inventory test manual suggestion that the 18 traits be divided into four classes, with six traits in the first class. This measured poise, ascendency and self assurance. It was interesting to note that the mean raw scores and their corresponding standard scores were in these six traits (dominance, capacity for status, sociability, social presence, social acceptance, sense of well being) consistently higher among the recreational (swimmer) average for men and women. It would be safe to surmise that according to the California Psychological Inventory manual the recreationally average were more confident, versatile, outgoing, enthusiastic, outspoken and energetic than the recreationally below average (nonswimmers).

Hunt (19) proved athletes were significantly different from non athletes on the scales of ascendency, responsibility and emotional stability using the Gordon Personal Profile.

Summary of Related Literature

It was the purpose of this review to expose the reader to many and varied studies in the area of personality and activity. References have been made to swimmers, nonswimmers, athletes, nonathletes, participants and non participants in a variety of sports and activities and comparisons have been made on a wide range of psychological test instruments. For the purpose of showing relationships, the activities

and personality tests used were reviewed extensively and their effects noted in reference to this study.

Much of the research done in this area using psychological instruments has been done by physical educators rather than persons trained in the use of these tests. Physical educators are not aware of the many limitations of these tests as research instruments, and go on to make broad generalizations about the findings that were unique to their own studies. They also make assumptions which may not be supported by clear results.

CHAPTER II

METHODS AND PROCEDURES

Introduction

It was the purpose of this study to determine whether there were measurable personality trait differences among college students who were able to swim and those who were not able to swim. By sheer nature of the test instrument used it was necessary to measure differences among males and females. Males score differently on various scales from females and vice versa, therefore these differences had to be taken into account so as to receive factual information on the personality traits of swimmers and nonswimmers. This was done by: (1) obtaining the sex differences, (2) tabulating the results, and (3) comparing the results for consistency with the test manual. The Edwards Personal Preference Schedule was used as the test instrument.

The following chapter contains the methods and procedures employed by the investigator to: (1) select the subjects; (2) select the test instrument and (3) collect and treat the test data obtained.

Subjects

All the 144 subjects were enrolled at the University of North Dakota in the second semester, 1971-1972, in the swimming service program. All were at the proficiency level of either beginner, intermediate or advanced. The beginning subjects were all classified as

nonswimmers whereas the intermediate and advanced subjects were collectively labelled as swimmers.

The Edwards Personal Preference Schedule was administered to all the aforementioned students under similar conditions in each instance. The University of North Dakota pool served as an appropriate location for the test. All testing was done in the second week of February, 1972. This time period was chosen with the specific purpose of ensuring that students could no longer add swimming courses used in this study. University administration distributed final enrollment sheets the first week of February 1972.

Test Instrument

The Edwards Personal Preference Schedule was chosen by the investigator because it appeared most appropriate for the study topic undertaken. Other instruments considered were the California Psychological Inventory, the Minnesota Multiphasic Personality Inventory and the Cattell Sixteen Personality Factor Questionnaire. However, all were discarded in favor of the Edwards. The test, chosen by the researcher, measured 15 personality traits applicable to the characteristics of students partaking in activity programs, swimming in this instance. The areas measured were achievement, deference, order, exhibition, autonomy, affiliation, intraception, succorance, dominance, abasement, nurturance, change, endurance, heterosexuality and aggression. The test was most desirable as a research instrument in this study for several reasons: (1) it was easily available; (2) it was relatively inexpensive and (3) it required little time to administer when considering the magnitude of the sample. The University of North Dakota counseling center made

available the question booklets at no expense, and the answer sheets were purchased by this investigator for a moderate sum of money. The test could be administered in approximately 40 minutes for the average college student, although no time limit was established. However, the students were encouraged to work as quickly as possible without omitting responses.

The test was of the forced choice type. The subjects were asked to choose one of a pair of statements most characteristic of themselves. The test contained 225 items and attempted to minimize the influence of social desirability. Assuming there were two statements representing different personality traits and they were equal with respect to social desirability, the responses were therefore more characteristic of the subject.

The reliability of the Edwards Personal Preference Schedule has been established by the split half reliability coefficients and the test-retest reliability coefficients.

The validity has been established by comparisons with other similar personality tests, for example, the Taylor Manifest Anxiety Scale and the Guilford-Martin Personnel Inventory as stated in Edwards Personal Preference Manual (1).

Collection and Treatment of Data

The investigator contacted the instructors who taught the swimming courses used in this study in order to explain its purpose and to seek approval for the use of the class members involved. The class period prior to the testing period, the researcher spoke to the students requesting their cooperation. The researcher proceeded

to explain the purpose of the study and the procedure the test would follow. The day of the test the subjects were individually given the test booklet with the response sheet placed inside. They were instructed to answer all questions as quickly as possible. Upon termination of the test, the response sheets were returned to the investigator and the students allowed to leave.

The response sheets were then hand scored by the researcher, with each subject receiving a score on each of the 15 variables. The results were then statistically treated by the Unadjusted Main Effects Method (20). This method expressed the relationship of the disproportinate cell frequencies among the independent variables (nonswimmers and swimmers) and the dependent variable (15 scales of the Edwards Personal Preference Schedule).

The Unadjusted Main Effects Method did provide a test of the stated hypothesis that a positive relationship existed among nonswimmers and swimmers and the variables of the Edwards Personal Preference Schedule.

CHAPTER III

ANALYSIS OF DATA

The subjects for the study were 144 students enrolled in swimming courses in the University of North Dakota service program in the second semester 1971-1972. The groups compared for purposes of the study were the following.

Nonswimmers (N=65) 37 of whom were male, 20 of whom were female and swimmers (N=79) 46 of whom were male, 33 of whom were female were the groups utilized in order to determine whether a nonswimmer and swimmer possessed certain measurable personality trait differences. Table 1 represents the subjects that participated in this study.

TABLE 1

SUBJECTS WHO PARTICIPATED IN STUDY

Subjects	Sex	N who took test	Total in each group	Total
Nonswimmer	Male	37	65	144
	Female	28		
Swimmer	Male	46	79	
	Female	33		

Analysis of Data

Following the application of the Edwards Personal Preference Schedule, the investigator hand scored the response sheets and gathered the raw scores for the subjects in the study. The raw scores were treated statistically using the Unadjusted Main Effect Method. Data concerning the subjects and the analysis of the data are presented in the following section.

Using the Unadjusted Main Effect Method, the sex and the swimming effects were found directly. The interaction effects were calculated by noting the Sum of Squares (SS) attributable to regression for male swimmers, male nonswimmers and female swimmers minus the Sum of Squares attributed to regression for males, females, swimmers and nonswimmers. The error terms (means squared within) were found directly. To calculate the Mean Square (MS), the Sum of Squares were divided by the degree of freedom (dg). To calculate the F-value (F) the Mean Square (MS) for sex, swimming and interaction was divided by the Mean Square (MS) within to determine the F-value for each category.

The method of fitting constants is not a partitioning method. That is, if the sum of squares is totaled, it does not equal the total sum of squares. Rather, they exceed the total sum of squares because of the suppressor relationship between the sex category and the swimming category. The results are presented in the even numbered tables, Tables 2 to 30, inclusive.

The process of obtaining the means for each of the variables was tabulated indirectly. The female nonswimmers were established as the constant and termed the intercept value. The remaining subjects,

male swimmers, male nonswimmers and female swimmers were located directly under the heading of Regression Coefficient. The regression coefficients were added or subtracted from the intercept value to determine the means for each of the groups. The intercept value itself was the mean for the female nonswimmer group. The results are indicated in the odd numbered tables, Tables 3 to 31, inclusive.

It is essential to bear in mind the preceding processes are executed fifteen different times, once for each variable on the Edwards Personal Preference Schedule.

After determining the F-value for all subjects and all 15 scales, the significant F-values were designated by an asterisk. The value of 4.03 or greater, was significant at the .05 level of confidence. This essentially meant that the variables of intraception, dominance, nurturance, change, achievement, succorance, and heterosexuality were significantly different at the .05 level of confidence for males and females. The variables of order, succorance and endurance were significantly different at the .05 level for swimmers and nonswimmers.

The asterisk in Table 2 designates there are significant differences on the sex variable. To discover which sex scored the significant difference, it would be necessary to sum the mean ($\overline{X}$) scores for the males and the mean ($\overline{X}$) scores for the females, both of which are found in Table 3. Doing so reveals that the males scored significantly higher on the achievement variable.

TABLE 2

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE ACHIEVEMENT VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	76.78	76.78	4.28*
Swimming	1	.50	.50	.05
Interaction	1	1.07	1.07	.06
Within	140	2513.21	17.95	

*4.03 <.05

TABLE 3

TABLE OF MEANS FOR THE ACHIEVEMENT VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	12.96
Male nonswimmer	13.24
Female swimmer	11.64
Female nonswimmer	11.57

TABLE 4

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE DEFERENCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	1.49	1.49	.11
Swimming	1	1.33	1.33	.11
Interaction	1	1.52	1.52	.11
Within	140	1915.92	13.69	

TABLE 5

TABLE OF MEANS FOR THE DEFERENCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	10.09
Male nonswimmer	10.46
Female swimmer	10.49
Female nonswimmer	10.43

There were no significant differences on the deference variable although the nonswimmer scored a slightly higher score than did the swimmers.

TABLE 6

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE ORDER VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	27.04	27.04	1.66
Swimming	1	69.64	69.64	4.28*
Interaction	1	.03	.03	.00
Within	140	2276.11	16.26	

*4.03 <.05

TABLE 7

TABLE OF MEANS FOR THE ORDER VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subject	$\overline{X}$
Male swimmer	8.57
Male nonswimmer	10.00
Female swimmer	7.70
Female nonswimmer	9.07

The asterisk designates a significant difference on the swimming variable. Following the description prior to Table 2 on page 21 it becomes apparent the nonswimmers have scored significantly higher on the order variable.

TABLE 8

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE EXHIBITION VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	24.53	24.53	2.10
Swimming	1	3.71	3.71	.32
Interaction	1	3.51	3.51	.30
Within	140	1632.70	11.66	

TABLE 9

TABLE OF MEANS FOR THE EXHIBITION VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	14.67
Male nonswimmer	14.59
Female swimmer	14.08
Female nonswimmer	13.46

No significant differences were scored on exhibition variable.

TABLE 10

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE AUTONOMY VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	9.26	9.26	.48
Swimming	1	48.47	48.47	2.51
Interaction	1	25.30	25.30	1.31
Within	140	2707.98	19.34	

TABLE 11

TABLE OF MEANS FOR THE AUTONOMY VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	15.54
Male nonswimmer	15.10
Female swimmer	15.80
Female nonswimmer	13.68

No significant differences were scored on the autonomy variable.

TABLE 12

SUMMARY TABLE OF THE ADJUSTED MAIN EFFECTS METHOD FOR THE AFFILIATION VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	19.23	19.23	.83
Swimming	1	18.96	18.96	.81
Interaction	1	42.57	42.57	1.83
Within	140	3258.74	23.28	

TABLE 13

TABLE OF MEANS FOR THE AFFILIATION VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	16.45
Male nonswimmer	14.75
Female swimmer	16.18
Female nonswimmer	16.71

No significant differences were scored on either the sex or the swimming categories.

TABLE 14

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE INTRACEPTION VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	250.72	250.72	11.84*
Swimming	1	26.76	26.76	1.26
Interaction	1	26.20	26.20	1.24
Within	140	2963.67	21.17	

*4.03 <.05

TABLE 15

TABLE OF MEANS FOR THE INTRACEPTION VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\bar{X}$
Male swimmer	15.05
Male nonswimmer	13.41
Female swimmer	16.94
Female nonswimmer	17.04

Males scored significantly higher on the intraception variable.

TABLE 16

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE SUCCORANCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	99.61	99.61	5.37*
Swimming	1	92.94	92.94	5.03*
Interaction	1	20.71	20.71	1.09
Within	140	2587.86	18.48	

*4.03 <.05

TABLE 17

TABLE OF MEANS FOR THE SUCCORANCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	11.53
Male nonswimmer	12.47
Female swimmer	12.49
Female nonswimmer	14.97

Nonswimmers as well as females scored significantly higher on the succorance variable.

TABLE 18

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE DOMINANCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	221.89	221.89	10.58*
Swimming	1	70.96	70.96	3.39
Interaction	1	8.08	8.08	.39
Within	140	2935.81	20.97	

*4.03 <.05

TABLE 19

TABLE OF MEANS FOR THE DOMINANCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\bar{X}$
Male swimmer	14.24
Male nonswimmer	13.27
Female swimmer	12.18
Female nonswimmer	10.25

Males are significantly more dominant as measured by this instrument.

TABLE 20

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE ABASEMENT VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	12.98	12.98	.68
Swimming	1	27.19	27.19	1.41
Interaction	1	15.10	15.10	.79
Within	140	2687.76	19.20	

TABLE 21

TABLE OF MEANS FOR THE ABASEMENT VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	14.41
Male nonswimmer	15.83
Female swimmer	15.60
Female nonswimmer	15.71

No significant differences were revealed on the abasement variable.

TABLE 22

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE NURTURANCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	192.47	192.47	7.69*
Swimming	1	2.80	2.80	.11
Interaction	1	.04	.04	.00
Within	140	3504.56	25.03	

*4.03 <.05

TABLE 23

TABLE OF MEANS FOR THE NURTURANCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\bar{X}$
Male swimmer	15.51
Male nonswimmer	15.70
Female swimmer	17.79
Female nonswimmer	18.07

Males scored significantly higher on the nurturance variable.

TABLE 24

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE CHANGE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	193.35	193.35	10.17*
Swimming	1	64.82	64.82	3.41
Interaction	1	5.08	5.08	.27
Within	140	2661.25	19.01	

*4.03 <.05

TABLE 25

TABLE OF MEANS FOR THE CHANGE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	17.11
Male nonswimmer	16.05
Female swimmer	19.82
Female nonswimmer	18.00

Females scored significantly higher on this variable. Also it is important to note that swimmers have scored much higher on this scale although not significantly higher.

TABLE 26

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE ENDURANCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	64.04	64.04	2.89
Swimming	1	91.36	91.36	4.12*
Interaction	1	5.69	5.69	.26
Within		3102.35	22.16	

*4.03 <.05

TABLE 27

TABLE OF MEANS FOR THE ENDURANCE VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\bar{X}$
Male swimmer	11.06
Male nonswimmer	13.02
Female swimmer	10.06
Female nonswimmer	11.21

Nonswimmers scored significantly higher, males did score higher than did females but not significantly, on the endurance variable.

TABLE 28

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE HETEROSEXUALITY VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	135.55	135.55	5.00*
Swimming	1	24.97	24.97	.92
Interaction	1	30.64	30.64	1.13
Within	140	3792.98	27.09	

*4.03 <.05

TABLE 29

TABLE OF MEANS FOR THE HETEROSEXUALITY VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	19.51
Male nonswimmer	17.89
Female swimmer	16.69
Female nonswimmer	16.96

Males scored significantly higher on this variable.

TABLE 30

SUMMARY TABLE OF THE UNADJUSTED MAIN EFFECTS METHOD FOR THE AGGRESSION VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Source of Variation	df	SS	MS	F
Sex	1	46.01	46.01	2.12
Swimming	1	6.50	6.50	.30
Interaction	1	7.56	7.56	.35
Within	140	3037.66	21.70	

TABLE 31

TABLE OF MEANS FOR THE AGGRESSION VARIABLE IN THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Subjects	$\overline{X}$
Male swimmer	13.00
Male nonswimmer	13.84
Female swimmer	12.27
Female nonswimmer	12.18

No significant differences were recorded.

The biographical data forms (see Appendix A) were attached to the answer sheets of the Edwards Personal Preference Schedule. The answered questions were compared statistically with each other. The results were tabulated and are presented in Table 32. No significant comparisons resulted.

TABLE 32

TABLE DEPICTING THE COMPARISONS OF SUPPLEMENTAL QUESTIONS WITH EACH OTHER

Question No.	2	3	3A	4	4A	5
2		.20	.17	.34	.39	-.32
3			.42	.56	.30	-.24
3A				.19	.31	-.26
4					.70	-.57
4A						-.49
5						

When the Unadjusted Main Effect Method was used to analyze the disproportionate cell frequencies the results of the swimmers category showed significant differences in the variables of order, succorance and endurance. This indicated that personality differences between swimmers and nonswimmers do exist as defined by characteristics of the Edwards Personal Preference Schedule. Data derived from the biographical data form suggested insignificant differences based on personal background information.

CHAPTER IV

DISCUSSION

The purpose of the study was to determine if nonswimmers and swimmers varied in personality characteristics, and to analyze the 15 personality traits measured by the Edwards Personal Preference Schedule using the Unadjusted Main Effects Method as the statistical process. The results of the study revealed that significant personality trait differences did exist between nonswimmers and swimmers on certain scales.

Pertinent to the Edwards Personal Preference Schedule findings, there were significant differences in group scores on three scales of the test instrument. There were wide ranges within groups, and overlapping within the groups on all scales, even those that showed the largest differences. With these differences in mind the following interpretations are presented.

On the Order (ord) scale, significant differences suggested the lesser the degree of swimming competence the more demanding the subjects were for organization and order. Exact teaching plans for new tasks were needed at the onset of the class to ensure a smoothly run progression without change. This was essential to aid in the water confidence of the nonswimmers.

On the Succorance (suc) scale, the implications drawn by the investigator were that nonswimmers, by reason of their expressed desire

for assistance and sympathetic understanding by others may be responsible for their overdependence and lack of motivation which is generally demanded in learning how to swim. For a complete list of mean scores on all 15 scales see Appendix B, Table 34, page 49.

On the Endurance (end) scale, significant differences suggested to the investigator that swimmers tended to be less likely to work at a task until successful, less likely to perfect a task before beginning another, less likely to keep working on the problem even though no apparent progress was being made and less likely to concentrate on the task at hand. This finding may corroborate the observations of swimming teachers who have noted nonswimmers tend to be more willing to work harder and longer in an attempt to perfect style; as opposed to the swimmer who will try several times without much apparent success and become resigned.

Although it was not the purpose of this study to measure sex differences by the Edwards Personal Preference Schedule, it was important to note differences did exist in reference to the validity of this sample of subjects. On the variables of achievement, intraception, succorance, dominance, nurturance, change and heterosexuality the subjects scored as predicted by the Edwards Personal Preference Schedule. (For complete table of mean scores for the significant sex variable differences see Appendix B, Table 35, page 50).

Pertinent to the biographical data form, there were no significant differences between nonswimmers and swimmers. However, interesting information was revealed.

On the question of formal instruction in swimming, 72.38 per cent of nonswimmers stated no previous training as compared to only

15.19 per cent of the swimmers. In regard to the question of parental swimming ability, 38.46 per cent of the fathers and 23.08 per cent of the mothers knew how to swim for the nonswimming group, as compared to 74.68 per cent of the fathers and 51.90 per cent of the mothers for the swimming group. This led the researcher to conclude that students with parents who possessed swimming ability were much more likely to know how to swim. On the question of swimming facilities available and used, it was interesting to note 67.69 per cent of the nonswimmers had facilities available to them and 50.77 per cent of the nonswimmers used these facilities, whereas 94.94 per cent of the swimmers had facilities available to them and 88.61 per cent of the swimmers used these facilities. This the investigator feels was a predictable relationship. It was also interesting to note 33.85 per cent of the nonswimmers expressed a fear of water as opposed to 8.86 per cent of the swimmers. (See Appendix A, Table 33, page 47, for summary of positive responses to the supplementary response sheet.) All subjects tested were from North Dakota or closely surrounding areas. Several studies suggest there are inherent factors which relate to swimming ability. Knelleken (21) and Elliot (22) classify attitudes as the most important factor in learning.

There could have been a variety of reasons why these results may not have been as great as in other studies. First, the Unadjusted Main Effects Method was used to determine personality differences in this study. No other study using the Edwards Personal Preference Schedule used this statistical technique. Behram (3) used the Guilford-Zimmerman temperament survey and the t test to obtain his

excellent results. It was possible that the Unadjusted Main Effects Method may have been a slightly harsh method of treating the data.

Second, the motivation of the participants may have been a factor in the outcome as discovered by Harper (23). For a number of reasons, subjects may not have wished to respond to the questionnaire to the best of their ability.

Finally the sample of subjects chosen may not have been well enough defined. More significant results may have been determined had this investigator been more careful to categorize swimmers and nonswimmers. For example, Behram (3) devised his own categorizing test whereas Ogilvie (13) used only champion swimmers.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The investigation was made to determine whether there were personality trait differences between nonswimmers and swimmers. The Edwards Personal Preference Schedule was used as the test instrument on 144 subjects. All participants were University of North Dakota students enrolled in the swimming service program for the second semester 1971-1972. The sample was further restricted to students enrolled in the courses designated as beginner, intermediate and advanced. The Unadjusted Main Effects Method was used to analyze scores statistically. All results which reached or exceeded the .05 level of confidence were accepted as significant.

Conclusions

Based on the analysis of data, the research hypothesis (which stated there would be a significant difference in scores between nonswimmers and swimmers on the Edwards Personal Preference Schedule) was accepted. On the scales of order, succorance and endurance, significant differences were established for the swimming variable. The biographical data (which showed no significant relationship) was compared on percentage value with information being obtained by this method. If was further concluded that nonswimmers and swimmers could

be predicted on the basis of scores obtained on the Edwards Personal Preference Schedule at least on the scales or order, succorance and endurance.

Recommendations for Further Study

Recommendations made as a result of this study were as follows:

1. Aquatic instructors should determine definitions of the personality traits they are interested in measuring. This would enable them to use personality test instruments or parts of them that related closely to their definitions, thus avoiding misinterpretation of the definition of each characteristic as stated in test manuals.

2. Aquatic instructors should determine methods of teaching nonswimmers experimentally to find the best possible method for teaching individuals who manifest psychologically unfavorable predispositions to swimming.

3. A short questionnaire, in which students respond to items pertinent to their fears, anxieties and backgrounds in regard to water experiences, should be developed.

4. A brief test to discover emotional instability may aid in subdividing nonswimmers into two homogeneous groups for purposes of effecting a better learning situation.

5. Aquatic instructors who use subjects for test purposes should make available all information to the group as quickly as possible. This would be to satisfy natural curiosity on the part of the student.

6. Written tests should be as brief and concise as possible so as not to incur motivation fatigue or mental anguish.

7. Care should be taken by a researcher to make subjects feel important, that is, ask that they put their names on answer sheets even though it is not used in the study. The tendency would be to respond more seriously to the test instrument.

8. A psychological test instrument should be developed to measure personality traits of nonswimmers and swimmers. This would greatly aid classification and teaching methods used to fulfill the task of the swimming instructor.

9. Norms should be developed on the aforementioned instrument for children, adolescents and adults so comparisons may be made on tested groups.

APPENDIX A

Supplementary Question Sheet Answered by Subjects

1. What state or province have you spent most of your life?

   _____

2. Have you had any formal instruction in swimming before?

   Yes_____ No_____

3. Does your father know how to swim?

   Yes_____ No_____

   a. Does your mother know how to swim?

   Yes_____ No_____

4. Was there a swimming facility available to you?

   Yes_____ No_____

   a. Did you use it?

   Yes_____ No_____

5. Do you have a fear of water?

   Yes_____ No_____

TABLE 33

SUMMARY TABLE OF POSITIVE RESPONSES TO THE SUPPLEMENTARY QUESTION SHEET

Question	Nonswimmer	Swimmer
2	27.62 per cent	84.81 per cent
3	38.46 per cent	74.68 per cent
3a	23.08 per cent	51.90 per cent
4	67.69 per cent	94.94 per cent
4a	50.77 per cent	88.61 per cent
5	33.85 per cent	8.86 per cent

APPENDIX B

TABLE 34

LIST OF MEAN SCORES ON ALL 15 SCALES OF THE EDWARDS PERSONAL PREFERENCE SCHEDULE

Scale	Nonswimmers		Swimmers	
	Male	Female	Male	Female
Achievement	13.24	11.57	12.96	11.64
Deference	10.46	10.43	10.09	10.49
Order	10.00	9.07	8.57	7.70
Exhibition	14.59	13.46	14.67	14.08
Autonomy	15.10	13.68	15.54	15.80
Affiliation	14.75	16.71	16.43	16.18
Intraception	13.41	17.04	15.05	16.94
Succorance	12.47	14.97	11.53	12.49
Dominance	13.27	10.27	14.24	12.18
Abasement	15.83	15.71	14.41	15.60
Nurturance	15.70	18.07	15.51	17.79
Change	16.05	18.00	17.11	19.82
Endurance	13.02	11.21	11.06	10.06
Heterosexuality	17.89	16.96	19.51	16.69

TABLE 35

TABLE OF MEAN SCORES FOR THE SIGNIFICANT SEX VARIABLE DIFFERENCES

Scale	Male students total mean score	Female students total mean score
Achievement	26.20*	23.21
Intraception	28.46	33.98*
Succorance	24.00	27.46*
Dominance	27.51*	22.43
Nurturance	31.21	35.86*
Change	27.11	27.82*
Heterosexuality	37.40*	33.65

*This total mean is significantly larger at the .05 level than the corresponding total mean for the opposite sex.

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REFERENCES

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